active at night, when they make cone-shaped holes in the ground while rooting for food. They live in dens 12-15 feet long and can undermine cart paths and restroom slabs.

There are no successful repellents, toxicants, or fumigants registered for armadillos. The use of insecticides to reduce food sources also has not been proven to stop armadillo digging. A fence slanted outward at a 40-degree angle, with a portion buried may be a somewhat effective barrier under certain conditions. Although live trapping of armadillos is very difficult, some people have experienced limited success by using a 10x12x32-in. (25x30x80 cm) live or box trap. The bait used by successful trappers is earthworms in a ball of dirt and placed in the toe of an old nylon stocking. Trapping is most effective when leaf litter or soil is placed over the trap entrance. Armadillos caught in these traps can be released in an area where you have obtained landowner permission several miles away from your home.

Shooting is another effective method to eliminate nuisance armadillos. However, discharging firearms is illegal in some areas and it also is illegal to use artificial lights other than outdoor house lights to aid in shooting at night. Whenever I felt the need to conduct an armadillo patrol on the course at night, I always called Security to tell them I was riding the course checking irrigation. It wouldn’t pay to have someone come charging up with lights flashing. Armadillo meat is reportedly edible if properly prepared; however, the story circulated some time ago about these animals hosting a virus that causes leprosy killed my appetite.

**DEER**

Rutting white-tailed deer have gouged a few putting greens from golf courses.
time to time and made a mess in a few
bunkers, but their biggest nuisance
factor is when the choose to graze
in the landscape beds on the course
or around the clubhouse. There are
registered deer repellents but, thanks
to our frequent irrigation or rainfall,
having to apply these materials repeat-
eedly can become expensive.

The best solution is to find land-
scape plant materials that have shown
resistance to deer feeding.

The following annuals, perennial-
s and bulbs have shown resistance
and rare or minor damage by deer in
Florida: ageratum, aloe, angel flower,
angels trumpet, anise, black eyed
susam, bush daisy, century plant, cone
flower, coreopsis/tickseed, crown of
thorns, devil’s trumpet, dusty miller,
ginger lily, heliconia, lily family, lily
of the Nile, lupine, marigolds, peace
lily, periwinkle, petunia, rotonuda, sage,
shasta daisy, ti tree, trillium, wake
robin, turks cap, verbena and yucca.

For resistant vines and ground
cover try allamanda, asparagus fern,
aztec grass, Boston fern, English ivy,
holly fern, pampas grass, shield fern,
society garlic, star jasmine, wandering
jew, and yellow jessamine.

The following shrubs are recom-
mended: banana shrub, bird of para-
dise, blackberry, bottlebrush, camellia,
carissa, Chinese holly, croton, garde-
nia, heavenly bamboo, ixora, Japanese
boxwood, juniper, lantana, mahonia,
myrtle-leaf holly, needle palm, olean-
der, philodendron, plumbago, rutty,
silver thorn, southern Indian azaleas,
sweet/tea olive, viburnum and wax
myrtle.

If you plant accent trees on the
course, the following have proven
der resistance: Australian pine,
bottlebrush, butterfly/cabada palms,
cabbage/palmettos, Christmas palms,
coconut palms, crape myrtle, date
palms, edible fig, eucalyptus, fishtail
palms, flowering dogwood, ligurstrum,
live oak, loquat, magnolia, orchid tree,
paurotis palm, persimmon, pineapple
guava, podocarpus, pomegranate,
ponytail, bottle palm, queen palm,
royal palm, thatch palm and yaupon.

**Raccoons, Skunks, and Opossums**

Except for the skunks we usually
get a smile on our faces when we catch
sight of these critters ambling around
the golf course. Unfortunately, they
quite often make pests of themselves
by getting into garbage cans, eating
pet food, getting into attics or beneath
houses, and eating home-grown fruits
and vegetables. Raccoons are a major
carrier of rabies in Florida.

These three mammals are oppor-
tunistic and have adapted well to
urbanization. They will eat any plant,
insect, or other animal food that is
readily available and that includes
food dumped into trash cans on the golf course. Golf course maintenance is normally a morning routine and the course set-up person is the one responsible for emptying trash cans in the morning, but that’s the problem: the garbage sits all night in containers on the course, inviting these critters to feast on the leftovers.

My radical suggestion is to have a member of golf operations — say a ranger — empty the trash cans at the close of business. If maintenance must shoulder the task alone, then investing in secure trash receptacles is the only other option, and even then I know of a couple of workers who surprised a raccoon dumpster diving in a closed trash can with a push-in flap.

These omnivores can also cause havoc by ripping the turfgrass in search of insects and their larvae in the soil. Of course control of the insects plays a large part in deterring and controlling damage.

Live traps baited with sardines or cat food can be effective if necessary. Once an animal is caught, another problem is created — what to do with it? Trap and release of wildlife is seldom biologically sound. Areas that appear suitable for release probably are not. Areas without a resident population of the same species as the relocated animal most likely do not meet its habitat requirements. Relocation to already occupied areas causes problems for both the relocated animal and the resident population of the same species. Relocation permits from the
Florida Game and Fresh Water Fish Commission (GFC) are required to transport and release any native wildlife species. Relocation of raccoons is discouraged and relocation permits will not be issued in many areas because of the possibility of spreading rabies.

**Moles**

Nothing can ruin your day like riding the course and seeing a mole tunnel cutting across one of your greens. There are many home remedies for mole control but moth balls, chewing gum and vibrating devices have never earned scientific proof of their effectiveness. While moles do have natural predators like copperhead and black rat snakes, barred owls, red fox and raccoons, you can’t wait for them to remove your problem when a green’s playability is at stake.

Since moles are insectivores who tunnel through the soil looking for insects and earthworms to eat, controlling obvious insect infestations with approved insecticides is one way to prevent mole activity, but it’s no guarantee. Repellents like Mole Out and Whole Control are one option, but for a large space like a golf course they may not be practical over time. They last longer in heavier soils and tend to dissipate faster in sandy soils.

Killing the moles unfortunately is likely the best option since the repetitive damage especially to a putting green can be critical. One hands-on method not for the squeamish is to tamp down the raised tunnel roof and then wait to see if the mole reopens the partially collapsed tunnel. When a person armed with a pitchfork sees the renewed active tunneling, they stab the tunnel with the pitchfork.

Another more detached method is to use a spring or harpoon trap. After again tamping down a section of the tunnel, the trap is cocked and the tines of the harpoon are placed against the top of the tamped soil. When the mole comes through to rebuild the tunnel he trips the trap and its curtains for Mr. Mole. The drawback of this method on a green is the appearance of the device and the potential for an accident if left unattended. If a trap is used, place a bucket upside down over it to discourage meddling.

If traps or having a designated mole hunter is not feasible you might try a couple of new baits which appear to be having some success - Mole Patrol and Talpirid.

**Snakes**

People are not born with an innate fear of snakes. It is merely one of those things we were taught at an early age much like our attitudes toward touching the kitchen range or going into the street. As we grew older we learned that ranges and streets weren’t the terrible things that we once thought, but they should be respected. However, our fear of snakes was continually reinforced and many people have never learned that there is no logical reason to have an extreme dread of all snakes. Statistics show that the potential danger of highway accidents is at least a hundred times greater than the chance of being bitten by a venomous snake. There are over 100,000 cases of dog bite reported in Florida each year compared to only an estimated 200 people bitten by venomous snakes. Snake-bite-related deaths have occurred at a rate of about one every four or five years in Florida. Mortality figures for lightning strikes and bee stings are much greater. Snakes are not aggressive and will not charge or chase after people. Their typical reaction to a human intruder is to crawl away and hide. However, snakes may react differently if they feel threatened. Some will hiss, shake their tail, and even try to bite an intimidating object. All snakes stick out their tongue frequently to smell their environment much the same way a dog sniffs at things.

There are no repellents, toxicants, or fumigants registered for snakes. Many home remedies such as blood, hair, and various chemicals may seem to work in some situations. However, unless the item has been scientifically tested, its effectiveness is questionable. The frequency of snake visits to your yard and home can be reduced by eliminating firewood stacks, debris, boards and other objects lying close to the ground creating preferred cool, damp, and dark shelter or prey habitat areas.

Snakes that frequent buildings can be trapped using a rodent glue board. Up to 4-foot rattlesnakes have been captured using that method. When locating the board on the floor along a wall, make sure you have it attached to a long enough handle that you can pick it up without getting bit. If you think your crew or club members need more safety training about avoiding and/or understanding snakes, you might give Jim Mendenhall of Squamata Reptiles a call at 352-663-9827. Jim has made presentations to three or four FGCSA chapters so far this year.

**Extra Bonus**

While the cicada killer wasp is not a vertebrate pest, I have vivid memories of this 3-inch long wasp flying in and out of burrows dug in sand traps just below the turf lip. Like most wasps, they can sting. They use their stinger to sedate and paralyze cicadas. Cicada killers will hunt cicadas during the summer months when populations are active. They will find a cicada, sting it and bring it back to its nest. Next they will drag the cicada down into the burrow where the paralyzed cicada will serve as food for the young cicada killers.
Most egg burrows will have one or two cicadas for every egg that is laid. Nests usually only have one egg chamber, but when populations are high, cicada killers will dig extra chambers or extra nests to accommodate reproduction capabilities. This will vary from year to year as the cicada population varies. Old folklore states that cicadas are active every seven or 12 years, but in fact some will emerge every year, depending on the region. Cicada killer populations will vary depending on the hatch or release of cicadas. In general, the more cicadas, the more cicada killers.

Cicada killers are a nuisance because they dig large, unsightly nests that are sometimes thought to be from a vertebrate because they are so big. Cicada killers will spend their days foraging and if you watch the nest, you may catch them entering or leaving. Since they are so large, most people are petrified of them. In fact, cicada killers are generally not aggressive, but don’t irritate them. Stay clear of their nests and be sure to keep children away from them as well.

Since the nest will not go away on its own and will probably be active every year, it is best to treat it as soon as you see it developing. The treatment method you choose largely depends on the cost and your comfort level.

If you have one or two nests and are seeing only one or two adults, control should be easy. Use CB Wasp Freeze for a quick knockdown of adults as they are entering or leaving a nest. CB Wasp Freeze uses a combination of active ingredients that work on a wasps even as large as cicada killers.

Be careful of less expensive, over-the-counter aerosols. Many such formulations are not strong enough for this type of wasp.

Once the adult has been sprayed and is dead, watch the nest for a few days. If no activity is noted, you have probably solved the problem. If you see new activity the following year, you will need to go to the second treatment option to ensure they don’t come back.

The second option is to use liquid concentrates if you don’t want to get close to the nest or if you have several nests that need to be treated. Liquid treatments should be done at night so there is little risk of conflict with adults. Liquid treatments are cheaper than using Wasp Freeze and will enable you to treat large infestations economically. More importantly, liquid treatments will provide some residual in the hole so you may be able to kill newly hatched or developing larva, which could prove important when dealing with chronic infestations.

The best way to treat with liquids is to use a pump-up sprayer. Take the tip off the extension wand so the material will flow like a water faucet. It is important to be able to have a high flow rate to flood the hole. This ensures it will sink to the egg chambers.

Use cypermethrin and a spreader-sticker mixed together. Cypermethrin will persist for a month or more. The Spreader sticker allows the treatment to penetrate the adults quicker, which kills them before they know what is happening. This eliminates the possibility of being stung. Since nests can have more than one egg chamber, you should treat with up to two quarts per nest. This ensures proper coverage and distribution throughout the chambers. Since most active areas have several nests, liquid treatments are more economical than using Wasp Freeze.

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For more information go to www.springdeadspot.com.
Edison Community College Brings GCO Program to SW Florida

By Todd Lowe, USGA Agronomist

In the golf course management industry, respect is a quality that is earned. Golf course superintendents are a close-knit group of men and women who rely on each other for advice, camaraderie and the development of their profession. It can sometimes take several years for newcomers to feel welcome in the industry, as they earn the respect from fellow professionals. For Dr. Lee Berndt, at Edison College in Fort Myers, respect is earned one student at a time.

Dr. Berndt is the director of the Golf Course Operations Program at Edison College. He earned a Ph.D. at Michigan State University in the department of Botany and Plant Pathology with Dr. Joe Vargas in 1990. His dissertation was on black layer. He also holds a masters degree in crop and soil sciences and a two-year turfgrass management certificate from MSU as well. After college, he was the director of Environmental Services and western regional agronomist for Jack Nicklaus Golf Services for two years. He then started a consulting business, assisting various golf course superintendents throughout the world. Berndt relocated to Fort Myers and began working at Edison College in 1997.

From its modest beginnings, Berndt has developed a very respectable program to support Florida golf courses in teaching, extension and research. Perhaps, the crowning jewel of Dr. Berndt's accomplishments at Edison College is the three-hole golf course laboratory that exists just outside the classroom door. The local golf course industry supported the Edison program by donating their time and labor in designing and constructing the facility.

Local golf course architect Gordon Lewis designed the layout, while Jim Glaze and Glase Golf built it. Boynton Pump and Irrigation Supply, in conjunction with Rain Bird, donated the Cirrus irrigation system. Watertronics donated the irrigation pump, and Turfgrass America donated most of the grasses. In addition, Wesco turf, in conjunction with Toro, donates the equipment used to maintain the holes and routinely rotates new equipment as needed.

Eight different grasses were installed on the facility, including a Tifdwarf green, a Tifeagle green and a Sea Isle I seashore paspalum green. Additional grasses on the laboratory include Tifway 419 & TifSport bermudagrass, Floratam St. Augustinegrass, zoysiagrass, and bahiagrass. For that reason the golf course is an excellent teaching, research and demonstration facility for the entire South Florida golf course industry. Students utilize the facility for learning about the various grasses, cultural practices and equipment utilized on golf courses. Also, chemical companies perform research at the

A Plexiglas wall was installed along the putting green edge to demonstrate the layers in a USGA-spec green construction. Photo by Todd Lowe.

Perhaps the crown jewel of Dr. Lee Berndt’s accomplishments at Edison Community College was the development of a three-hole research and demonstration facility just outside the classroom door. Photo by Todd Lowe.
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...graduates from the program can transfer their credits toward a bachelor of science degree in turfgrass management at UF. The Professional Golf Management Program at Florida Gulf Coast University, also in Fort Myers, requires students to take GCO classes at Edison.

Plants of the Year

Here is the second group in the Plants of the Year series for 2006. The plants selected for this program have been found to be good performers in the Florida environment and require less maintenance and fewer inputs. Here are three specimens for your consideration. Two are palm trees since they seem to weather hurricanes better than many trees. Go to www.fngla.org for more information and suppliers who carry these plants.

Common name: Florida Thatch Palm
Botanical name: Thrinax radiata
Hardiness: Zones 10 -11
Mature height and spread: 20’ tall by 5’ wide
Classification: Palm
Landscape use: Specimen
Characteristics: An attractive, medium-sized, solitary fan palm with a slender, smooth trunk and green, glossy, circular fan leaves with drooping leaf tips. Salt tolerant and slow growing, this versatile Florida native palm thrives in full sun or shade and is drought tolerant once established. It also has low nutritional requirements.

Common name: Dwarf Powderpuff
Botanical name: Calliandra emarginata
Hardiness: Zones 9B - 11
Mature height and spread: 5’-6’ tall by 6’ wide
Classification: Shrub
Landscape use: Hedge, foundation planting in mass or as a specimen plant.
Characteristics: This dwarf shrub produces silky leaflets that are bronze and turn green as they mature. The small flat bloom varies in color — typically deep red — and is produced during warm months. From bud to bloom-fade is approximately three weeks. This cultivar is cold tolerant and requires light pruning. Also is highly drought tolerant.

Edison’s facility is utilized by several chemical companies as well as GCO students. Here is a plot showing the effects of several types of hydraulic fluids at different temperatures on turf health. Photo by Todd Lowe.
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Fertilizer Use Under Scrutiny by Cities, Counties

The broad-based risks from contaminated fast-release fertilizer, including harm to intergenerational health and welfare, make it imperative that the law does not leave control of hazardous substances in fertilizer to discretionary or voluntary industry measures.

- Crystal River City Resolution

By Betsy McGill

While water-quantity continues to be a major issue for most areas, several municipalities and counties are targeting fertilizer use on lawns and commercial landscapes as a means of addressing water quality. The cities of Jacksonville, Naples and Crystal River as well as Sarasota County have considered regulating the type and quantity of fertilizer that can be used and/or the timing of applications, citing the need to reduce nitrogen and other nutrients being introduced into water bodies.

One of the difficulties in singling out a product to “ban” or to “endorse,” however, is that terms to describe products such as “fast release,” “slow release,” “water soluble” or “organic,” can be confusing without a thorough understanding of how a term applies to that product and the way it works. Also of concern is the lack of hard data confirming how much nutrient runoff is actually originating from landscape fertilization. At a recent Green Industries Forum in Palmetto, a representative of the Manatee Bay Estuary Program said that 62 percent of the nitrogen being introduced into the bay is the result of stormwater runoff; of that 62 percent, attendees were told that 20 percent originates from residential lawns. These numbers, though, are based on modeling – taking representative samples, then using that data times the total area of lawns to arrive at a figure. At this time, there is no data on how many lawns are being maintained by lawn care services versus homeowners, how many are being fertilized or how often (and some studies indicate that many lawns are not fertilized at all).

Sarasota County has hired a consultant to assemble a working group of stakeholders to look more closely at this issue over the next 12 months. I’ll be participating, as will others within the Florida Sod Growers Cooperative. As always, our industry’s position is that we support reasonable and enforceable actions based on good science. We also support the use of scientifically based Best Management Practices rather than county-by-county regulation. Please keep me posted if you hear of regulations of this type in your area and stay tuned for more information.

EDITORS NOTE: This note in the most recent Florida Sod Growers Cooperative is reprinted here to show that our affiliations with Allied Associations are working as we work together and share information on common issues. The Crystal River resolution at the opening speaks for itself as it shows the monumental lack of understanding by local officials of what and how fertilizer works. That misunderstanding continues with the use of terms like “organic” and “soluble.” These people don’t seem to get that all nutrients must be soluble for the plants/turf to use them. Hopefully the task group will be able to bring some practical common sense and actual facts to light during their deliberations in Sarasota.